

AVIATION

The Oldest American Aeronautical Magazine

JANUARY 26, 1925

Issued Weekly

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The Los Angeles being hauled to the mast of the U.S.S. Patoka, in first sea mooring test

VOLUME
XVIII

SPECIAL FEATURES

NUMBER
4

ELECTRIC DYNAMOMETERS IN ENGINE DEVELOPMENT
PRIVATELY OWNED AND OPERATED AIR TERMINALS
EXPENDITURES OF GOVERNMENT WITH AIRCRAFT INDUSTRY

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Curtiss Reed Duralumin Propeller used on U. S. Pursuit Planes

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Garden City, N. Y.

JANUARY 26, 1925

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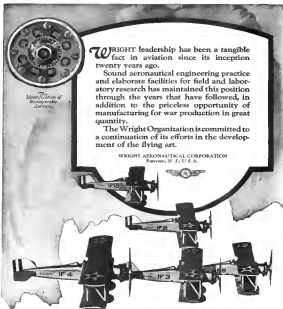
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Aircraft Regulations and the Public

WITH regard to aeronautical legislation it is not so much a question of whether or not we shall have regulations governing aircraft, but rather a question of when and what kind of regulations we shall have. Aviation is never apt to forget that the public has something to say in this matter, too. When planes get more common, as they will within a few years, the public will demand some method of identifying law flying planes which endangers the lives of those on the ground.

The question then comes down to how and when. There are two schools: one advocating state regulation, and the other federal regulation. The advocates of state regulation feel that it would be more flexible and less extensive than federal control, that it would fit local conditions and that if politics should influence the enforcement, they would have a chance to get in on it. However, we believe that the conclusion resulting from state regulation would more than counterbalance the possible advantages. The planes of the future will fly from one state to another as an automobile travels from one state to another. If every state has its own laws and regulations, and some enforce them and some don't, it will certainly make things more difficult for the flyer.

Commercial aviation seems to have got along fairly well so far without any legislation and there seems to be no desperate hurry about enacting a bill through Congress, but all the same more and more states and communities are passing air laws and ordinances, and public opinion is growing more insistent that some kind of legislation be passed. It will be seen from an analysis of aircraft legislation that there are no fixed regulations laid down as to the method of licensing or inspection. All this will have to be worked out slowly rather than rushed. A law, if passed now, should be general in its terms and the details could be worked out gradually. The world be better than having a drastic law thrust upon states at a later date. Legislation which attempted by the completeness of the regulations to make aviation absolutely safe could only succeed if it kept all airplanes on the ground. All that is needed at the present time is to give aviation a legal status to allow of the registration and identification of planes and the licensing of pilots. The interpretation of the law, especially at the beginning, should be fairly liberal and regulations should be framed with a view to encouraging flying rather than making it absolutely safe. The law should be held as a club over those whose motives are obviously in bad need of repair, but as a rule the club should be used with discretion.

If regulatory legislation were passed and reasonable regulations are adopted, it could be a real help to the flyer, for the mere passing of a law should give the public greater confidence in air transport. First, the public would feel that

it was being protected from irresponsible and incompetently trained pilots. Second, it would be satisfied that the pilots had had a physical examination and were fit to fly. And third, it would know that the machines in use were structurally sound and well kept up. All this would increase confidence and help the aviation business. There would be less prejudice to flying in new types of machines of those had passed a structural test. Even capital might become a little less timid about entering into air transport if legislation were passed and aviation legalized.

Lord Thomson

AN ex-Liberal Minister is a new person, indeed. Even in Great Britain, where a separate Air Department has been established since the spring of 1919, there exists only a handful of ex-Air Ministers. In July there is none, for although that country has an independent Air Force, this depends from a Commissioner for Aeronautics and not from a regular Air Ministry. As to France, where M. Lecomte-Rouge is often referred to as the "Air Minister," this is only a title of courtesy, for he had little to do with the Ministry of Aeronautics, and his tenure depends from the Ministry of Public Works.

Therefore, Great Britain is the only country that has the authority to make an air force equal in status to its military and naval forces. Perhaps it would be proper to go further and say that Great Britain has made its air force its "first line of defense." Lord Thomson's arrival in this country on a lecture tour will give the American people an opportunity to see and hear one of these new types of cabinet officers.

Regardless of the astounding averages that he undoubtedly will convey to the American public, he will be chiefly regarded as a symbol of a new era in national defense. And, as he is presented not slowly, the confidence and confidence of his forces of a country under a responsible cabinet head will probably be affected by a complete consideration of all the defense departments under a single control. What would that obviously correct organization plan is achieved, the tendency will be toward modification of the governmental air arm.

What Airplanes Cost

ANYONE who has wondered what airplanes cost will be enlightened when they have finished reading this issue of AVIATION. The costs that are shown in the tables given what can be considered a catalogue of American aircraft prices. No more expensive figures have ever been available and while condensed tables of figures are tedious reading, they encompass into small space the facts needed for discussion.

was soon recognized by engine designers and manufacturers as an invaluable adjunct to engine development. The progress of engine design was marked from the start by innumerable small changes and modifications of gears, pistons, valves, etc., and each one of these changes might have an effect on the output of the engine. It was for such testing that the electric dynamometer was used in the laboratory as well as in the factory for the checking of the finished product.

Following the outbreak of the War of 1914-18, representatives of the British Royal Flying Corps opened negotiations with the Curtiss Aeroplane and Motor Corp., of Buffalo, for the manufacture of airplane engines, and, as a result, they shipped abroad a large number of motors of the OXH and motor cars, 50 and 350 hp, as well as the 8-cylinder, 50-hp, V2 of the approximately 250 hp. The Curtiss Company has among the first airplane engine manufacturers to use the electric dynamometer.

Modern Installations

Fig. 3 shows two of its dynamometer sets, one of which the V2, 8-cylinder, 200 hp. equipment is shown in test. While this engine was not used exclusively in any one plane, the experience gained in its design was of great value in the development of equipment of greater horsepower.

After the war the Curtiss organization developed a 32-cylinder motor which proved extremely successful and which has been extensively for use in several Army and Navy planes which have not attained speed records to speak of. This work was transferred from Buffalo, under a license, to Long Island City, where the same electric dynamometer testing equipment was established.

Fig. 2 shows one of a number of electric dynamometer and Liberty engines in the machine of their standard test at the Packard plant.

Prior to the development of the Liberty engine, Col. J. O. Vossard of the Packard Company had designed a 12-cylinder airplane engine, tests on which were conducted at his own laboratory in the electric dynamometer.

Other interesting power work was carried on during the war by F. S. Davenport. The Humber Dynamo engine, now developed by him, was the only one that was particularly attempted in the United States and constituted the use of three 306 hp. dynamometers coupled in series to drive a load.

Visible experience was gained by similar methods at the



Fig. 3. Wright engine in test on Electric Dynamometer in the laboratory of the Wright Aeronautical Corp., Paterson, N. J.

McCook Field Dynamometer Laboratory, where were developed engines larger than the Liberty. Several electric dynamometers are used at that station.

In the early days of the war, arrangements were made by all 31 States to interfere in this country the Hispano engine. This engine was first built in Spain by a French engineer and later taken up by the French and British. It was an extremely successful ground engine, and it was this equipment which made the Reed engine. Work was first undertaken in the country by the Packard Aeronautical Co. (later the Wright Martin Co. and finally the Wright Aeronautical Corp.). The latter company in turn engaged in the manufacture of several engines at Paterson, N. J., and a large number of its designs have grown out of the original Hispano engine on the dynamometer stand. For such a test it is necessary to know a large volume of air over the engine to maintain conditions of flight.

Dynamometers Widely Used

The electric dynamometer has been used by various government civilian branches. McCook Field, including the Army Experimental Station at Langley, Aeronautics Division at the Washington Navy Yard, the Naval Aircraft Factory at Philadelphia, the National Advisory Committee on Aeronautics, Langley Field, and others.

Medium has already been made of the Bureau of Standards, which was among the first to undertake important development of airplane engines. The engine later used experiment in "altitude chamber" under conditions approximating those encountered by the airplane at great altitudes.

It is interesting to note that a number of firms of engine builders, including an observer in Great Britain have also adopted the electric dynamometer.

A great many other types of aviation motors were designed by various engineers in addition to those which have been mentioned and, while but few of these are serving, they all contributed to the volume of knowledge which was indispensable in carrying out our government air program.

Honorary Members of N.A.A.

The following persons have been elected to honorary membership in the National Aeronautics Association:

Wright Wright*	John J. Montgomery
Orville Wright	Charles M. Mayler
Glenn H. Ketchum Wright	Glenn H. Ketchum Wright
Bernard P. Pottenger	Thomas A. Edison
Orville Chamber*	

*Deceased.

Fig. 2. Liberty engine in test on Electric Dynamometer at the Packard Motor Car Co., Detroit

Privately Owned and Operated Air Terminals

By HOWARD F. WEHRLE

Formerly an Editor and Pilot in the Air Service, U. S. Army, 1916-19

The voice of the airplane as a means of transportation is "rapidly growing itself out of the category for adequate terminal facilities as becoming more daily. As a part of the scheme of things air travel is here to stay and we should prepare ourselves to use this new method of rapid transit. It is the most comfortable, the speediest and pleasant and as well for the most economical, especially for the long hauls in this country of ours. These few men who took part in aviation during the world war were men and are men of vision, and it is the possibility, but only one and men of vision, although outside this "infant industry," have not, as far as I know, been there.

The possibilities of air travel are so great that the wonder of these times does not believe that any need is today equipped to grasp it and believe that the next decade will bring about changes in transportation methods that will be extraordinary.

Looking into the Future

Probably the greatest problem of air traffic, next to efficiency of the ships themselves, is the building and maintaining of air terminals as a system of air terminals properly equipped and having adequate facilities for all types of aircraft whether light or heavier than air. Considered from a purely possible standpoint, well chosen locations for terminals will bring the answer and economy without further delay.

It seems that the terminal problem of the terminal system will have to be solved by private enterprise, and that building up will have to be a regular normal business procedure. It is not reasonable to suppose that the government will assist commercial aviation by subsidy, because it is not the policy to subsidize private enterprise. Witness the disappearance of the American Merchant Marine. The experience with the Airline Route Act and the Airline Route Act made our government very cautious in this respect. But we must not let it be a healthy thing for any business?

The particular interest discussed here was brought into focus by a visit to a very successful aviation test held in 1931 in a Midwestern city. During the course of the visit, the future possibilities of air travel and what about preventing with a view to purchasing or acquiring the use of suitable property on which to build an up to date flying field and terminal that would be available for the use of all types of aircraft. Five business men, who had been paid, and also discussed the problem. The decision was made that it would be possible to do so.

Preliminary Organization

After this quite some time was given to finding a suitable property for the purpose and when one was located that seemed to be the best for the purpose, the Post Office Department and the War Department were asked to send experienced pilots and inspectors to give suggestions as to what would be the proper property suitable for use by the Air Mail and the Army. On field that is suitable for the two departments is suitable for all manner of flying. Some of these agencies are extremely interested and most very efficient men to go into the matter. Possible opinion being given, the five engineers, after careful consideration and analysis of the various methods by which such a project could be financed, decided to form a holding company capitalized for an amount equal to the cost of the ground, and to the stock to a number of returns whose price would be made from the sale of the property and the price at which the land of the nation's economy and security. It would be well to mention that, up to this point, no publicity was given as to the solution of the property and preliminary organization of the same.

The organization of the holding company proceeded quickly and took over four months to complete. The prospectus was put in prospective buyers of stock in a straightforward, accurate and concise manner, and each person approached with the fact that the organizers would not attempt to predict a future for

aviation nor was the idea given out that a stockholder would immediately reap great benefits in the way of dividends. Detailed data was given on various commercial attempts in the past and a comprehensive prospectus was worked out. The holding company was finally incorporated and was made up of a collection of leading citizens who were enthusiastic because they considered as air terminal a good thing for the public as general and the city in particular.

It would not be necessary to take further detail because the make up a general outline of the method is employed daily in organizing various lines of business into corporations. It is easily seen that with a good property bought at the right time the holding company would have little or no loss and the property itself would be worth the amount put into it and the particular one under discussion the property has slightly increased in value. Now the organization had proceeded to the place where it had a flying field bought and paid for and ready to do business. Next was the plan of equipment and operating the air terminal.

A Field Operating Company

It was further decided by the organizers that an operating company be formed to equip the field for landing passengers and general commercial aviation activity, and to conduct it financially and also in connection with such government agencies as could be shown. (As this was the government agency was the U. S. Army Air Service.) The operating company would pay a reasonable price for the use of the ground, say a yearly rental that would be about 4 per cent on the amount of the holding company. The operating company would pay this rental for approximately a 10 year period, with an option to purchase the property at any time before the expiration of the lease at a price equal to the amount of the rental paid. If the option was exercised, the difference between the rental paid by the operating company and 6 per cent compound interest on the rental investment, the balance, was the operating company to make a mortgage of the property to the U. S. Army Air Service. The operating company would be allowed at the end of, or some time during, the six year period, sufficient for deficit, and would pay a net return on the basis, was the operating company to make a mortgage of the property to the U. S. Army Air Service. The operating company would be allowed at the end of the holding company would be represented by the land itself which it is reasonable to suppose would not depreciate but more likely to increase in value as more and more aviation activity. In other words, those who purchase stock in the holding company would be able to receive the return of every dollar put in it.

The operating company was capitalized for a given amount (for obvious reasons exact amounts are not given) and controlled by individuals experienced in aviation, and who would be the property along the lines of business business principles. Only such expert and business men would be considered absolutely necessary for the serving of aircraft. All further improvements were to be made upon the return of the property. In this way the usual operations of the operating company would be kept in, but could be increased at any time that conditions would warrant it and expansion of the business could be continued. Such expansion was so important and checked that they may expand from time to time to various sources.

Honest Solicitation

The operating company now offered its stock to the public and on the campaign prospective purchasers were informed of the highly important nature of the undertaking and that the company would be of great help to the nation or failure of flying as a business possibility.

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Publisher's News Letter

A printer generally avoids writing what he sells; a candy maker is not apt to eat his product. In the same way most publishers who give publicity to others avoid emphasizing their own personalities in their papers. For the first time since AVIATION has been published the exception is too great to escape.

Probably many readers may think that the picture in this column with its fierce, determined and forceful appearance is that of the writer of this page and that the earnest, sincere and kind person pictured in the next column is the popular conception of a Congressman. But the person in the next column is not the writer of this page. The person in the next column is not the writer of this page. The person in the next column is not the writer of this page.

Major of the N. Y. American thought we looked like at the hearing of the Committee held in New York. It is one of the delights of publishing to see ourselves as others see us.

It is unfortunate that the use of AVIATION does not permit it to print many of the stories that it should give to its readers. But until the aeronautical industry enlarges its advertising budget and gives the support that foreign contractors give their trade press, many important matters will have to go unreported. A case in point is the account of the work of the Langport Committee that has been holding hearings almost daily since Dec. 1. The hapless task of giving any adequate interpretation of the ground covered by these Congressmen can be indicated by the fact that by Dec. 22, over four hundred printed pages of testimony had been taken. Since that time an equal volume of information has been spread on the record. It would take many pages to even summarize the proceedings, which, however, give a very interesting picture of the present status of aviation in this country. The conclusions of the Committee with its recommendations will, of course, be discussed fully.

There are many other events and occurrences that we would like to "cover" but it would require twice the space we have at our disposal to do so. A word or two may be said here about the personnel of the Langport Committee. Mr. Langport of Wisconsin has yielded the chair at most of the hearings to Hon. Randolph Perkins of New Jersey, who has conducted the hearings with dignity, tact and intelligence. Usually his examination of witnesses is followed by further questioning by the Hon. Armand S. Paul of New York and Hon. Clarence F. Lee of California, both of whom show a commendable interest in bringing out clearly the witnesses' viewpoint. Then the "Pink's Red Boy" of the Committee usually gives the witness a concrete cross examination. Hon. Frank R. Reed, of Illinois, is the nearest approach to the type of passive distant attorney that could be imagined. His cross examinations have brought out the two high spots in the investigation so far. The first is the cost of aviation since the War, 433 million dollars. The second was that General Patrick could not recall a single achievement of McCook Field. General Lansing could only name the "wildcat pump" and Charles Lawrence brought up the "ultra-violet valve." Mr. Reid used this information to suggest that a mechanical cross-examination. His wit and humorous side were shown from being taken too seriously.



What the conclusion of the Committee will be can be foreseen in a general way from the questions asked those who appear before it. They will probably argue some conclusion of our aviation: they will emphasize the need of encouraging commercial aviation by the government, they will probably recommend an engineering committee to report on the best way to bring this to a realization. They may make recommendations regarding McCook Field and the Naval Aircraft Factory. Probably the report is finally published will serve as a compendium of information that will be the most complete that has yet been available.—L. D. G.



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